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A RESEARCH STUDY TO IDENTIFY THE IMPACTS OF EARLY AND LATE IDENTIFICATION OF HEARING LOSS IMPAIRMENTS WITH RESPECT TO AGE AND TEST SCORES

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Abstract:
Objective: *The aim of this research was to determine the early identification effects of language development hearing impairment and identification of the proper age of the hearing impairment.* ***Method:*** *This research was carried out at Services Hospital, Lahore (September 2017 to August 2018) by using a predesigned questionnaire (Peabody Picture Vocabulary Test) in order to gather required information from the research participants. This material helped in the determination of expressive and receptive score of the language at early and late hearing impairment identification among children.* ***Result:*** *Research included one hundred respondents selected out of four different age groups in the age bracket of 8 – 14 years. Various average scores of the age groups were such as age bracket of (6 – 8) years, (8 – 10) years, (10 – 12) years and above 12 years were identified as (early and late) having respective proportions of (52% & 42%), (60% & 41%), (71% & 40%) and (75% & 60%). Language score on the basis of PPVT test was in the range of (20 – 30), (40 – 60), (60 – 80) and (80 – 100) respectively 4%, 28%, 14% and 54%. Commonly prevalent hearing loss degree was the degree of moderately severe (58%) in the early identification; whereas, late identification as (465) moderately severe degree of hearing loss impairment. Thirty-six respondents were early identified; whereas, late identified cases were forty-one in number.*
Conclusion: *It is evident from the research outcomes that hearing loss at the age of six months managed through suitable therapy brings productive outcomes and it is a safe and effective strategy. This strategy is successful in the development of language skills among children including infants and adolescents affected by hearing loss. Hearing loss identification at the age of six months can resume normal activity of language as a result of the timely intervention.*
Keywords: *Hearing Loss, Impairment, Language, Vocabulary and PPVT.*

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INTRODUCTION:

Generally, in Pakistan, first trimester prenatal identification is not criticized due to religious concerns and families also accept it. Usually, termination of pregnancy is preferred by couples, when the fetus is known to be or at any risk of abnormality. This research was based on the question of the effectiveness of age of identification of auditory loss in terms of the development of the language of deaf and hard of hearing children. Recent research by Moeller (2000) and Yoshinaga, seedy, Coulter and Mehl (1998) strongly suggest that if the child suffering from hearing loss be identified and receive appropriate treatment before he gets 6 months of age, there is a strong probability of developing a similar language skill to their hearing peers. Another research highlighted those children who were not intervened early so their mental age was lower than that of their hearing peer groups (Karchmer, & Allen, 1999). Therefore, it implies that diagnosis of hearing the loss in early years helps in a child's language development. The minimum age for hearing aid fitting to the hearing-impaired children is suggested as 4 weeks of age (New York state department of health, 2007) and if intervened appropriately after the early identification of auditory impairment they can be admitted in the general education classroom
(Joint Committee on Infant's Hearing.2000)
Recent researches pointed out that children who suffer from hearing loss before birth and who are identified, diagnosed and received appropriate intervention at less than six months of age, are developed better speech and language development, and children who were treated with hearing loss after the age of 6 months. (Yoshinaga-Itano, and Apuzzo, 1998). Many countries practised assessment and intervention of hearing the loss in early age and experienced positive results as well (Joint Committee on Infant Hearing, 2007). Children's language learning capacity can possibly be improved by early identification of hearing loss and by following the treatment plan. Early detection in general and access to quality services for children who suffer from hearing impairment is important for the development of language and speech skills, which is directly linked with the cognitive ability of children. On the other hand, the late identified severe degree of hearing loss may have a negative effect on the life of children while living in the world of normal hearing people.

METHODOLOGY:

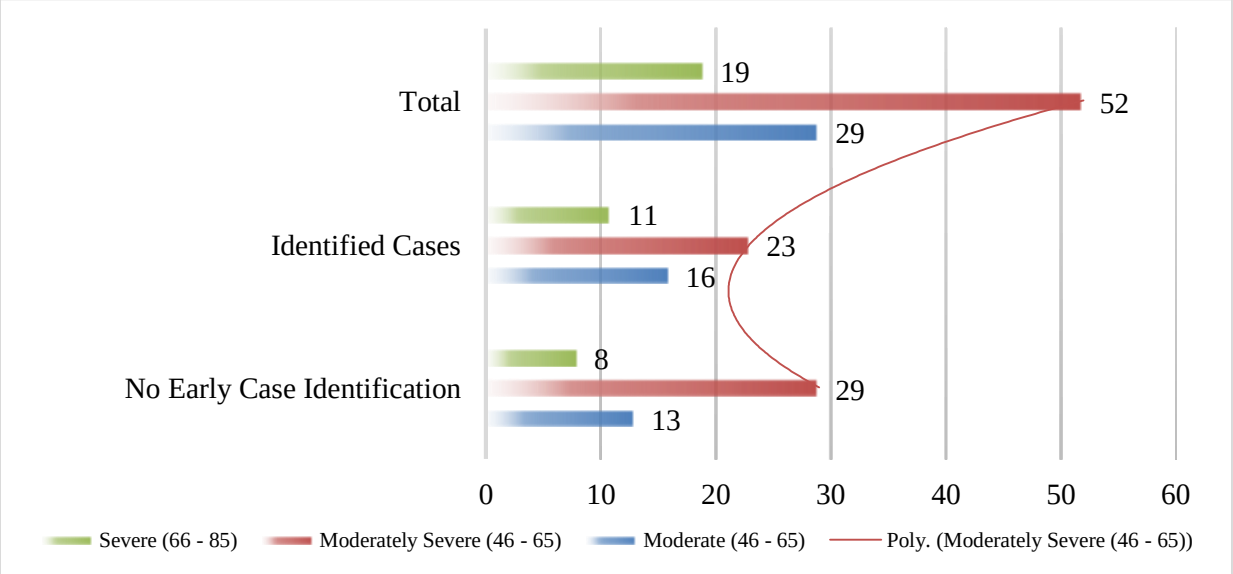
The research was descriptive in nature and data was collected through observation. A survey was designed to collect the information regarding early identification of hearing loss and its effectiveness for hearing impaired children. Observation technique was used to collect the information. The questionnaire was also developed to collect data from the respondents. All hearing-impaired belonging to the age group (6 – 13) years were included in this study. A sample size of 100 students was selected by simple random sampling technique from the population. A questionnaire Form was used to collect data from respondents. A questionnaire including close-ended and open-ended questions. Peabody picture vocabulary test was adapted and used to measure the language of respondents. Data was organized, tabulated and analyzed by computing frequencies, means and percentages and presented in tabular and graphical form.
The medical reports of hearing assessment of individual children were collected, analyzed and organized to describe the configuration of hearing the loss of early and late identified children.

RESULTS:

The research included one hundred respondents selected out of four different age groups in the age bracket of 8 – 14 years. Various average scores of the age groups were such as age bracket of (6 – 8) years, (8 – 10) years, (10 – 12) years and above 12 years were identified as (early and late) having respective proportions of (52% & 42%), (60% & 41%), (71% & 40%) and (75% & 60%). Language score on the basis of PPVT test was in the range of (20 – 30), (40 – 60), (60 – 80) and (80 – 100) respectively 4%, 28%, 14% and 54%. Commonly prevalent hearing loss degree was the degree of moderately severe (58%) in the early identification; whereas, late identification as (465) moderately severe degree of hearing loss impairment. Thirty-six respondents were early identified; whereas, late identified cases were forty-one in number. Detailed outcomes are as under:

Table – I: Distribution of Early and Late Identified Children on The Basis of Degree of Hearing Loss (100)

The degree of Loss of Hearing	No Early Case Identification	Percentage	Identified Cases	Late Percentage	Total
Moderate (46 - 65)	13	26.0	16	26.0	29
Moderately Severe (46 - 65)	29	58.0	23	46.0	52
Severe (66 - 85)	8	16.0	11	32.0	19



It is clear that most of the cases had moderately severe auditory loss i.e. 52 of 100 had auditory loss which was moderately severe type among which 29 children were those who were early identified and 23 were late identified, children, 29 cases had a moderate degree of hearing loss among that 13 were from early identified group and 16 were from late identified group, and only 19 and least cases had severe degree of hearing loss from which 8 were from early identified group and 11 from late identified group.

Table – II: Scores of early identified children on PPVT (50)

Early Identified Children on PPVT	Percentage
20 - 40	4
40 - 60	28
60 - 80	54
80 - 100	14

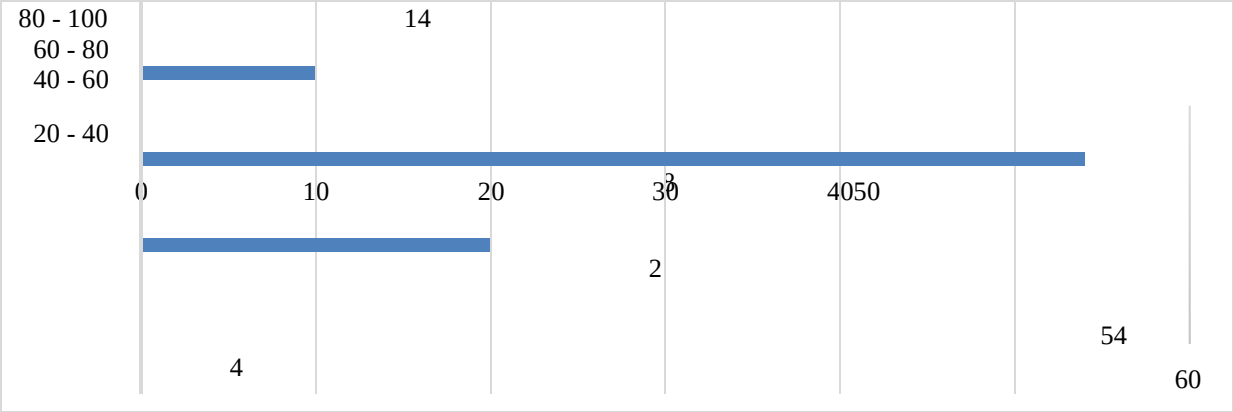


Table – III: Distribution of Early Identified Cases with Respect to The Scores Obtained on Language Assessment Test PPVT in percentage (50)

Test Score in Percentage	Number of Cases	Percentage
20 - 40	2	4.0
40 - 60	14	28.0
60 - 80	27	54.0
80 - 100	7	14.0

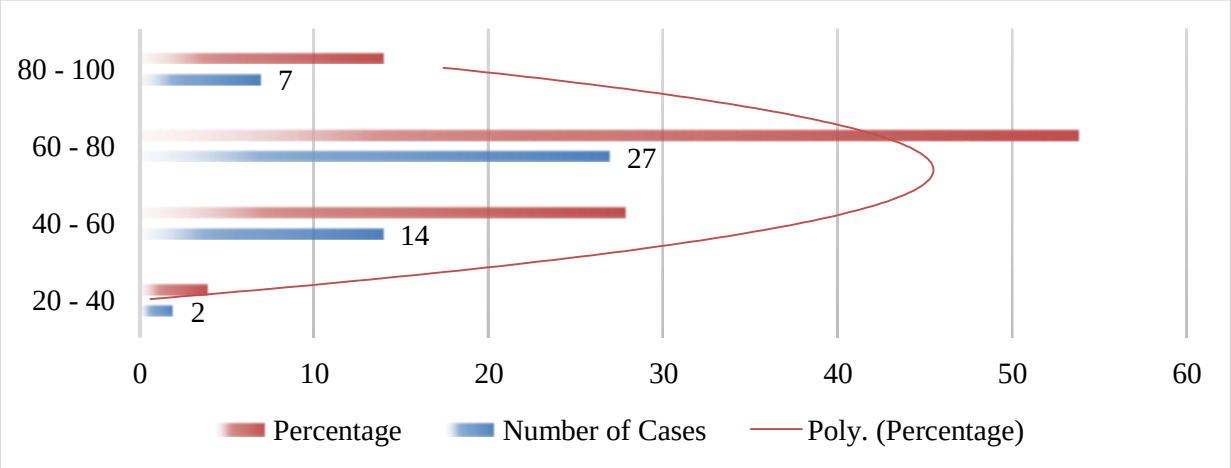


Table – IV: Late Identified Children on PPVT (50)

Late Identified Children on PPVT	Percentage
20 - 40	59
40 - 60	23
60 - 80	10
80 - 100	8

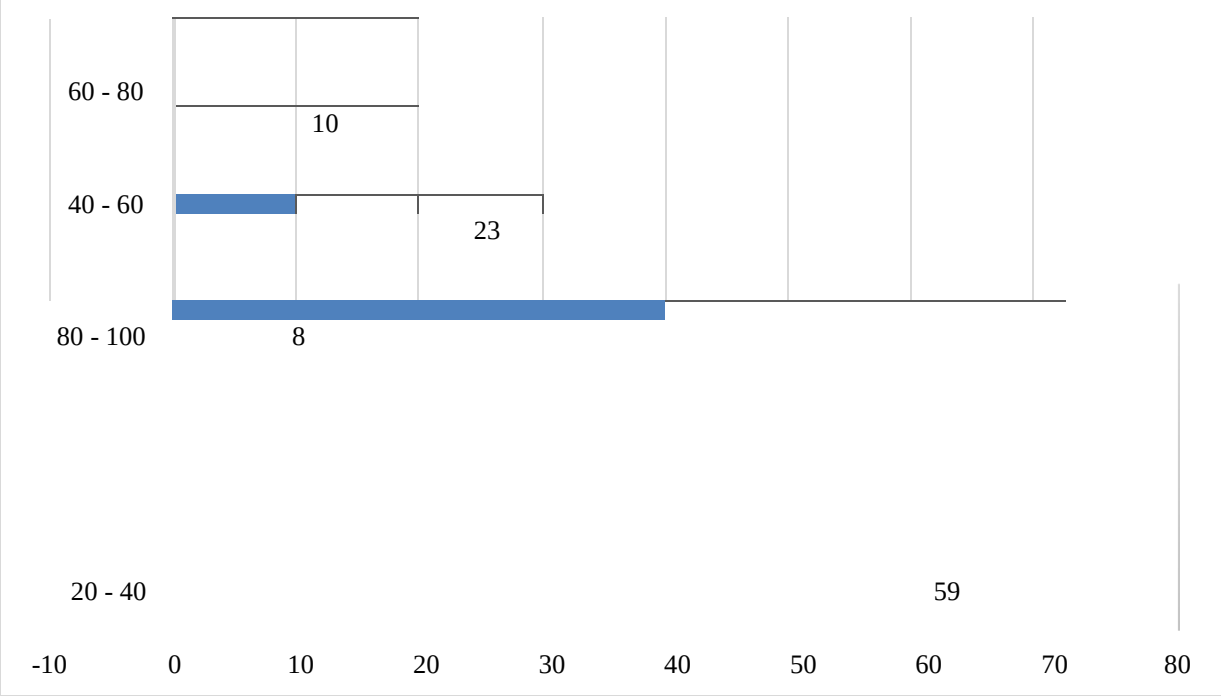


Table – V: Distribution of Late Identified Cases with Respect to Scores on Language Assessment Test PPVT Obtained in Percentage (50)

Test Score in Percentage	Number of Cases	Percentage
20 - 40	29	58.0
40 - 60	12	24.0
60 - 80	5	19.0
80 - 100	4	8.0

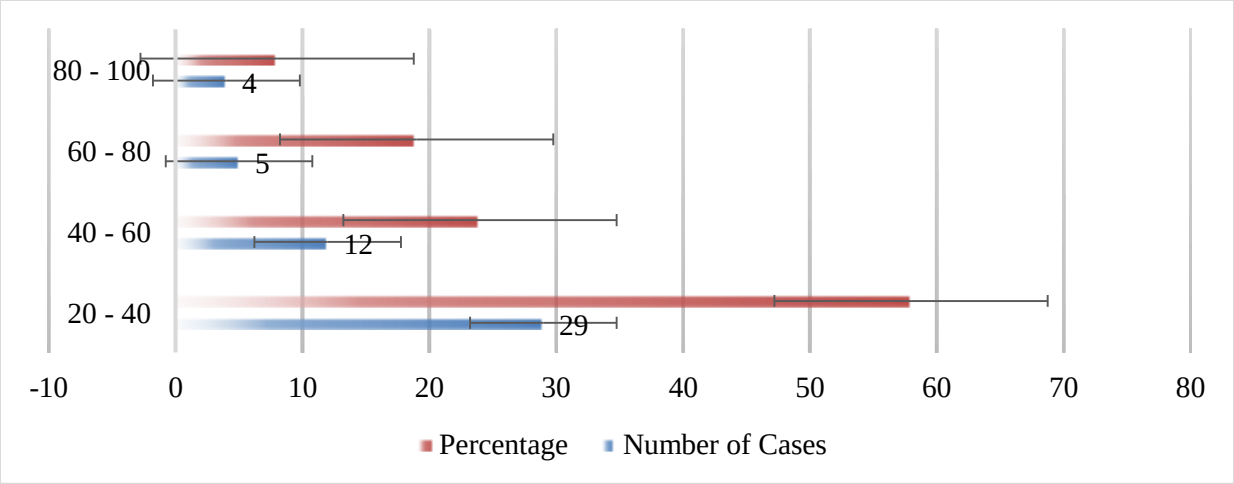
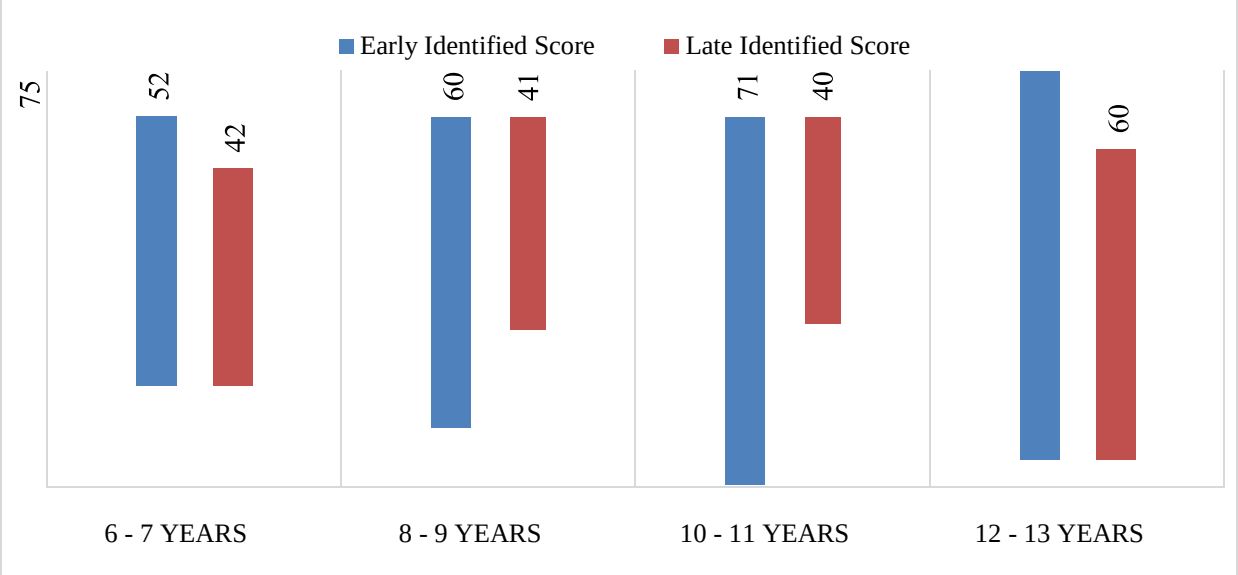


Table – VI: Age-wise Distribution of Early and Late Identified Scores

Age	Early Identified Score	Late Identified Score
6 - 7 Years	52	42
8 - 9 Years	60	41
10 - 11 Years	71	40
12 - 13 Years	75	60



Among early identified children 54% children scored within range, 60-80.28% had their scores in range 40-60.14% children scores were in range 80-100 and only 4% children scored in range 20-40.it is clear that most of the children 54% scores were in range 60-80 and the lowest number of children scored 2040 on PPVT. Peabody picture vocabulary test was administered to obtain language scores of late identified. This can be seen that 59% of late identified children scored 20- 30, 23% scored 40-60, 10%

scored 60-80 and only 8% scored 80-100. Mostly children scored 20-40% on PPVT and least children scored 80-100.

Finally, data were divided into four groups in terms of their age and analysis was done by comparing average scores of children on Peabody picture vocabulary test of early and late identified children with respect to their age group represented in the following bar graph. Graphical Representation of Comparison of Average Scores of Early and Late Identified Children with respect to Different Age Group (N=100). Graph 1 shows a comparison of average scores of early and late identified children of respective age group. It is clear that average scores on PPVT (Peabody Pitcher Vocabulary test) of early identified children of every age group are better than that of late identified children. Scores are increasing with increase in age of children. Highest scores are obtained by the eldest children in the study.

DISCUSSION:

The aim of this research was to determine the early identification effects of language development hearing impairment and identification of the proper age of the hearing impairment. In the total of one hundred patients fifty were managed before reaching the age of six months; whereas, remaining were managed at a later stage of six months because the identification of hearing impairment was identified at a later stage. Research shows that the score of the early identified children was higher than the children identified at a later stage. Various authors consider the first six months as critical to identify a possible residual hearing impairment among children. Normal language scores were scored by all those who were assessed in the age bracket of (6 – 13) years of age. Studies also report the benefits of timely diagnosis on the children speech-language being affected by congenital hearing impairment. Similar outcomes are also presented by Coulter, Seedy and Yoshinaga (1998). These authors determined the skills of the language on a total of 150 children during a rehab programme. These children were in the age bracket of (13 – 36) months. They also reported that the skills were fine then the children determined after six months of age. Early identification brings better outcomes in terms of language acquisition among disabled children. We need to assess children before six months for hearing loss possibilities.

CONCLUSIONS:

It is evident from the research outcomes that hearing loss at the age of six months managed through suitable therapy brings productive outcomes and it is a safe and effective strategy. This strategy is successful in the development of language skills among children including infants and adolescents affected by hearing loss. Hearing loss identification at the age of six months can resume normal activity of language as a result of the timely intervention. We need to identify the hearing impairment before the age of six months in order to avoid any possible reduced language acquisition.

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